Supporting Documentation for the Probability of Ignition, IFT-ignite (based on the IGNITE module in BehavePlus)

Name of Software Tool: IFT-ignite

Current Version Description/Date: IFT-ignite version 01-31-12

Software Code and History: The mathematical code for IFT-ignite is from the Fire Behavior Software Developer Kit (FBSDK) and the BehavePlus5 xfblib.cpp and xfblib.h. IFT- IGNITE (01-31-12) implements all of the BehavePlus functionality found in the BehavePlus-IGNITE module. Details comparing the functionality of BehavePlus5 and equivalent tools in IFTDSS can be found in Drury et al. (2012, BehavePlus Functionality available in IFTDSS Version 1.0). Rigorous testing has been performed to verify that the mathematical output from the IFT- IGNITE module is consistent with the output from the BehavePlus5- IGNITE module. Details concerning the output evaluation between the BehavePlus-IGNITE and IFT- IGNITE modules can be found in PDF files included in the IFTDSS online help (under **IFTDSS Compared with Other Systems > Module Test Cases**). Future versions of IFTDSS are scheduled to expand the BehavePlus functionality.

Software Developer(s) Names, Organization, and Contact Information:
- BehavePlus was developed by U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program. Contact information is available on: http://www.firemodels.org/index.php/behaveplus-support/behaveplus-contact-us
- IFT-ignite was developed by the IFTDSS Development Team based on software libraries provided by the BehavePlus developers. The IFTDSS Development Team may be contacted using the Feedback function available on every page of IFTDSS.

Science Module Contact, Names, Organization, and Contact Information:
- Contact information for implementation of the IGNITE module in BehavePlus or the underlying scientific algorithms is available on: http://www.firemodels.org/index.php/behaveplus-support/behaveplus-contact-us
- For questions regarding IFT-ignite, please contact the IFTDSS Team using the Feedback Function available on every page of IFTDSS.

Availability of the Version of Record: The latest version of the software code for IFT-ignite resides with Sonoma Technology, Inc. (STI) and is being used in IFTDSS version 1.0. However, STI did not develop the scientific algorithms within the software code. The IFT-ignite software module code is public domain and available from STI upon written request.

Primary Funding Sources:

- BehavePlus development and support has been funded by U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program; U.S. Forest Service, Fire and Aviation Management; the Joint Fire Science Program (JFSP).
- IFT-ignite development was funded by JFSP.

Application Purpose (General): The IFT-ignite module can be used to calculate the probability of ignition (0-100%) from a firebrand or from a lightning strike. The calculation for probability of ignition from a firebrand is based on fuel shading from the sun, 1-hour fuel moisture, and the air temperature. The probability of ignition from lightning is calculated from fuel type, duff and litter depth, fuel moisture, and lightning strike type (negative, positive, or unknown). The IFT-ignite module can be used to model probability of ignition from a firebrand for Element 7 (Fire Behavior Prescription) of a burn plan, and can be used to facilitate decision making for other Elements of a burn plan, including Element 16 and 17 (Holding and Contingency Plans).

Application Purpose (Fuel Treatment): The IFT-ignite module can be used for prescribed burn planning and to fill in specified elements of a burn plan.

User/Application Documentation:

- Documentation of BehavePlus operation and application:
  http://www.firemodels.org/index.php/national-systems/behaveplus

User Application Guidance:

- The IFTDSS online help includes a PDF tutorial that illustrates how to use IFTDSS to prepare a burn plan (Preparing a Prescribed Burn Plan).

Scientific Foundations of the Software Tool:

- Degree of validation/evaluation and availability of written results:
  No information available at this time.
- Publications describing BehavePlus and the fire models on which it is based:
  http://www.firemodels.org/index.php/behaveplus-introduction/behaveplus-publications

Training Availability:

- Training on BehavePlus can be found at:
  http://www.firemodels.org/index.php/behaveplus-support/behaveplus-training